Science & Technology Policy in the Obama Administration

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AAAS

Science & Technology Policy Fellows Orientation

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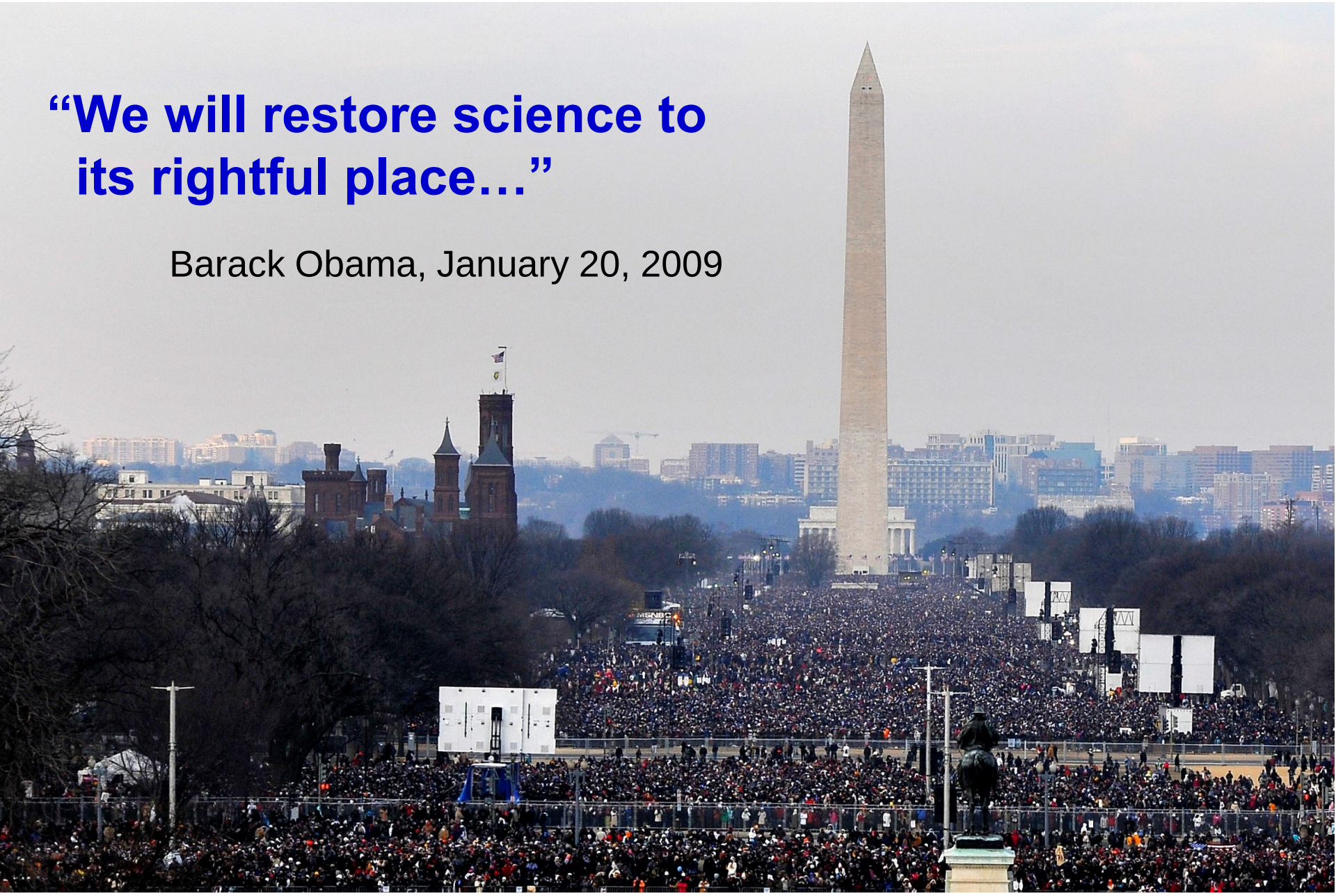

“We will restore science to its rightful place…”
Barack Obama, January 20, 2009

The place of science on the agenda

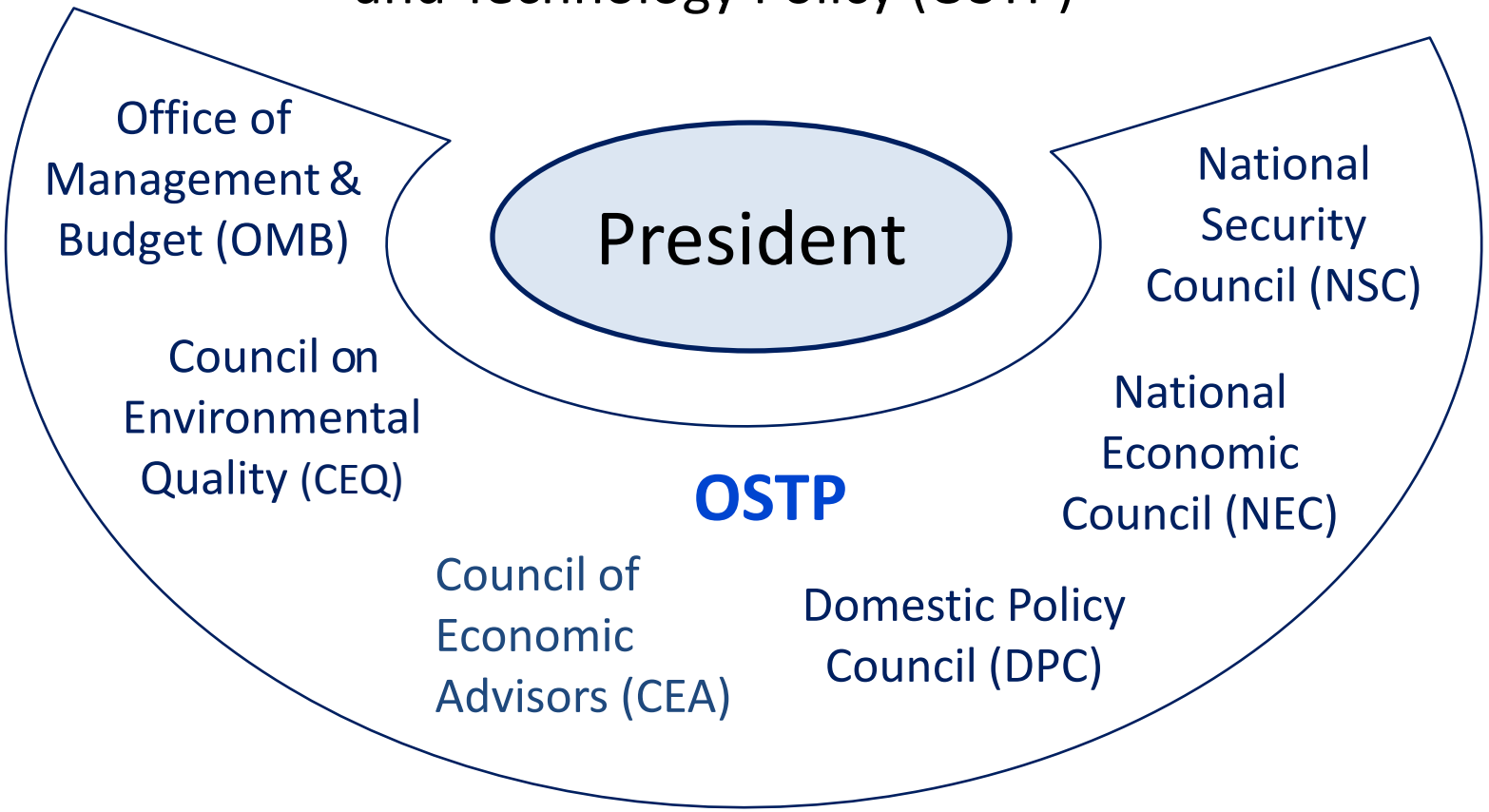
S&T are central to meeting key challenges of

- economic development & sustainable growth
- biomedicine & health-care delivery
- clean, safe, reliable, & affordable energy
- climate-change mitigation & adaptation
- competing uses of land & water
- the health & productivity of the oceans
- national & homeland security

as well as lifting the human spirit through discovery, invention, & expanded understanding.

The place of science in the White House…

…is centered in the Office of Science and Technology Policy (OSTP)



EOP also includes Offices of: Vice President, Chief of Staff, Cabinet Affairs, Communications, Intergovernmental Relations, Public Engagement, Social Secretary, US Trade Representative, Energy & Climate Change, and more.

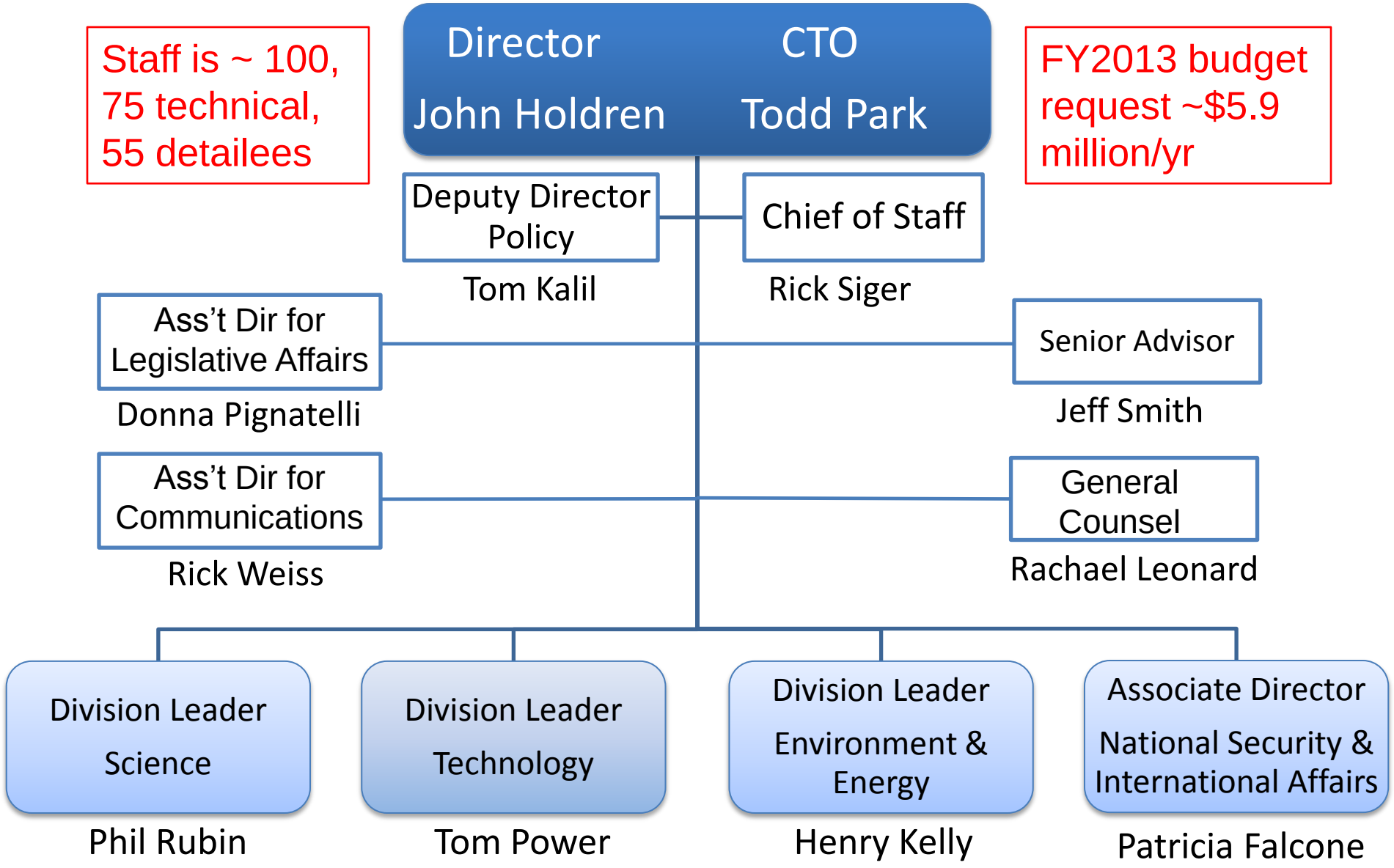
OSTP's responsibilities include…

- ensuring that the President and his senior advisors have objective, up-to date, understandable information about S&T bearing on the policy matters before them;
- formulating Presidential initiatives relating to the application of S&T to national priorities around the economy, health, education, environment, energy, security (in concert with OMB, NEC, DPC, NSS, Exec Branch departments & agencies);
- developing the S&T elements of the President's annual budget submission to Congress (in concert with OMB & Exec Branch departments & agencies);

OSTP's responsibilities also include…

- providing White House liaison and oversight for the NSF and NASA;
- carrying out a range of functions in support of National Security and Emergency Preparedness Communications
- coordinating & overseeing US cooperation in S&T with other countries

OSTP structure



OSTP-managed entities

- National Science & Technology Council (NSTC)
  - Deputy secretaries & undersecretaries of cabinet departments with S&T missions, plus heads of NSF, NIH, NASA, NOAA, NIST, EPA, USGS, CDC
  - Nominally chaired by the President; chaired in practice by the OSTP Director / Science Advisor; administered by OSTP
  - Five standing committees: Science; Technology; Environment, Natural Resources, and Sustainability; National and Homeland Security; and STEM education
  - Coordinates S&T activities that cross agency boundaries, including such major initiatives as the US Global Change Research Program, the National Climate Assessment, the National Nanotechnology Initiative, and the Networking and Information Technology R&D program

OSTP-managed entities (continued)

- National Oceans Council (NOC, jointly with CEQ)
  - Responsible for implementing the National Policy on Oceans, Coasts, and the Great Lakes
- Emerging Technologies Interagency Policy Coordinating Committee (ETIPCC, jointly with OMB/OIRA & USTR)
  - Addresses the intersection of science & regulation around infotech, biotech, and nanotech
- Six ministerial-level Joint Commissions on S&T Cooperation
  - With Brazil, China, India, Japan, Korea, Russia
- S&T Working Group, US-Russia Presidential Commission
- US-China Dialogue on Innovation Policy

OSTP-managed entities (continued)

- President's Council of Advisors on Science and Technology (PCAST)
  - A PCAST or its equivalent has existed under every U.S. President since Eisenhower.
  - The current PCAST has 21 members, of which 20, including one Co-Chair, are part-time, uncompensated Special Government Employees, appointed by the President.
  - The 21st member and other Co-Chair is the Assistant to the President for S&T / OSTP Director.
  - PCAST's function is to provide an additional high-caliber source of S&T advice for the President and to help link OSTP to the outside S&T community.
  - Administrative support for PCAST is provided by an Executive Director and two deputies housed in OSTP.

The members of the Obama PCAST

Under President Obama…

- OSTP technical staff has doubled, and the number of divisions has been restored to the statutory four.
- The rank of Assistant to the President has been restored to the OSTP Director and given to the CTO / OSTP Associate Director for Technology.
- The National Science and Technology Council (NSTC) has been revitalized and expanded.
- PCAST has become much more active and more relevant.

What has PCAST done under Obama?

- PCAST studies requested and completed:
  - The science and technology of 2009-H1N1 influenza
  - Reengineering the influenza vaccine production enterprise
  - Assessment of the National Nanotechnology Initiative (NNI)
  - "Prepare and Inspire": K-12 STEM education
  - Accelerating the Pace of Change in Energy Technologies
  - Realizing the Full Potential of Health IT to Improve Healthcare
  - "Designing a Digital Future": Networking and IT R&D
  - Ensuring American leadership in advanced manufacturing
  - Biodiversity preservation and ecosystem sustainability
  - Strengthening STEM teaching in the first two college years
  - 2nd NNI assessment
  - The Advanced Manufacturing Partnership (AMP)
  - Managing government-owned spectrum for economic growth

President Obama has embraced a high proportion of PCAST's recommendations.

What he's done: PCAST studies implemented

PCAST recommendations embodied in the 2010-2013 budgets:

- Prepare an additional 100,000 K-12 STEM teachers by the end of the decade
- Launch a new Advanced Research Projects Agency – Education (ARPA-ED)
- Initiate improvements to influenza-vaccine manufacturing to shorten production timeframe
- Expand funding for Advanced Research Projects Agency – Energy (ARPA-E) and six new Energy Innovation Hubs; conduct Quadrennial Technology Review to assess energy options
- Accelerate adoption of Electronic Health Records, and develop standards for health information exchange over the internet
- Support research to foster the next revolution in IT, to help transform healthcare, energy efficiency, education, and transportation
- Launch a network of advanced-manufacturing centers

What else has President Obama done to restore science to “its rightful place”?

What he's done: Presidential appointments

- Five Nobel Laureates in science
  - Energy Secretary Chu, OSTP Associate Director for Science Wieman, NCI Director Varmus, PCAST Members Molina and Zewail
- Another 25+ members of the NAS, NAE, IOM, and American Academy of Arts & Sciences
  - Including heads of NIH, NOAA, USGS, FDA, NIFA
- A CTO (1st Chopra, now Park) and a CIO (1st Kundra, now van Roekel) in the White House for the first time
- An engineer running EPA (Lisa Jackson)

What he's done: using the bully pulpit

The President has consistently highlighted the importance of S&T in speeches…

- Throughout the 2008 and 2012 campaigns
- January 2009 Inaugural Address
- January 2009 joint session of Congress
- April 2009 annual meeting of the NAS
- June 2009 Cairo, Egypt (S&T for development)
- Sept 2009 Albany NY (American Innovation Strategy)
- Jan 2010, 2011, 2012 (State of the Union)
- April 2010 Kennedy Space Center (Space Policy)
- October 2010 MIT (energy strategy)
- June 2011 Carnegie Mellon University (Advanced Manufacturing, Robotics)

"Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before."

- President Obama, April 27, 2009

What he's done: Presidential events

First Astronomy Night for Kids on the South Lawn, October 2009

Historic visit to laboratories at the National Institutes of Health, September, 2009

Presidential events (continued)

First White House Science Fair, October 2010

Dropping by NYC Science Fair, March 2011

"Whenever I get a chance to go to a science fair, I go."

- President Obama at NYC Science and Engineering Fair, March 2011

What he's done: honoring STEM teachers

President Obama honoring educators who have shown excellence in teaching and mentoring students in mathematics and science at an awards ceremony at the White House, January 6, 2010.

…and STEM students

What he's done: The American Innovation Strategy (9-09, updated 10-10)

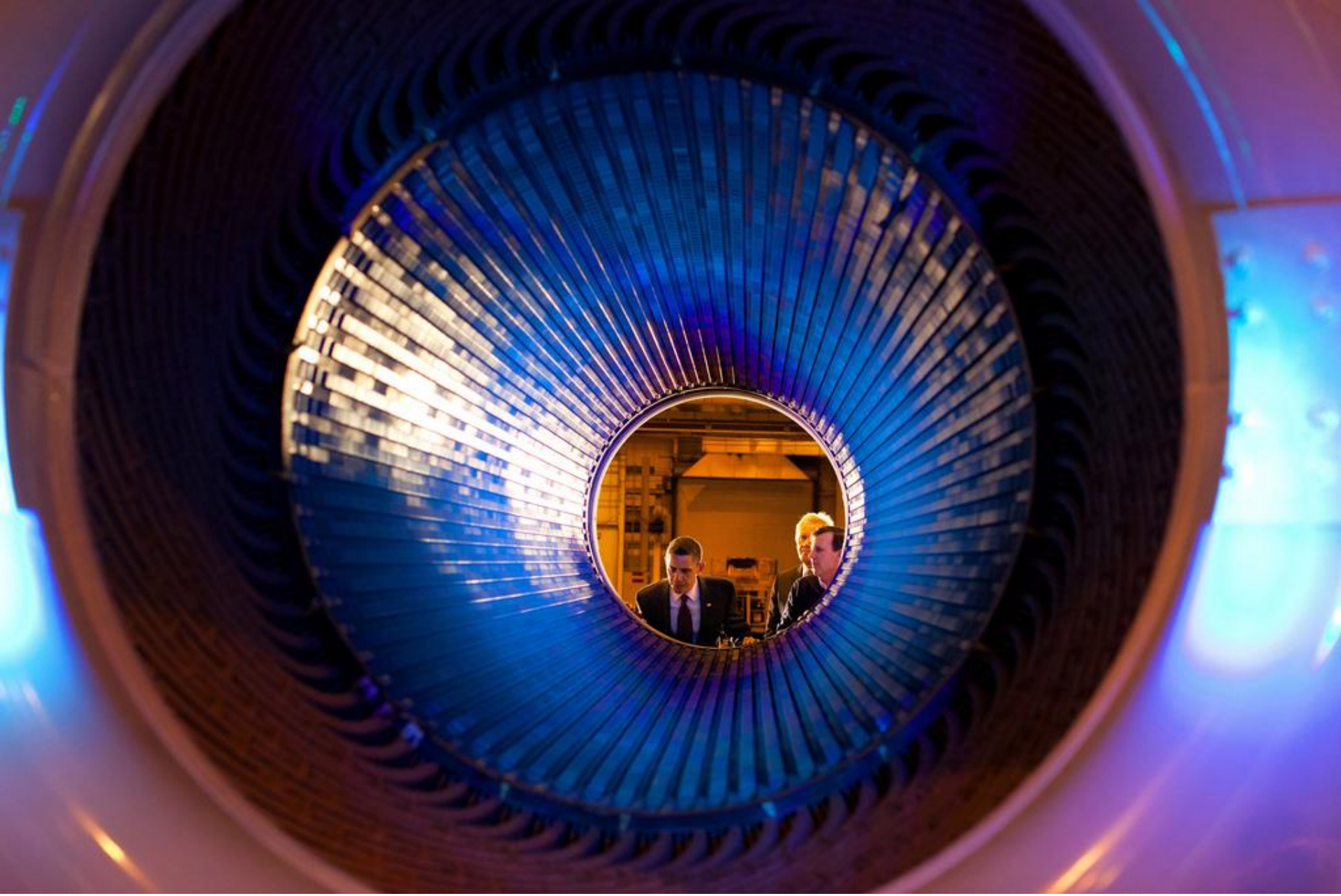
- Invest in the building blocks of innovation
  - educate Americans with 21st century skills
  - strengthen leadership in fundamental research
  - build a leading physical infrastructure
  - develop an advanced IT "ecosystem"
- Promote market-based innovation
  - accelerate business innovation w R&E tax credit
  - encourage innovation-based entrepreneurship
  - grow investments in ingenuity w effective IPR policy
  - promote innovative, open, competitive markets

The American Innovation Strategy (continued)

- Catalyze breakthroughs for national priorities
  - unleash a clean-energy revolution
  - accelerate biotech, nanotech, & advanced mfg
  - develop breakthroughs in space applications
  - drive breakthroughs in health-care technology
  - create a leap forward in educational technologies
- These efforts include increased support for…
  - scientists & engineers early in their careers
  - more engagement of girls/women in STEM fields
  - commercializing university research
  - multidisciplinary & high-risk/high-return research

What he's done: public-private partnerships

- Firms fund 67% of US R&D, perform 72%.
- Pres Obama has proposed to make the Research & Experimentation tax credit permanent.
- Recovery Act has helped start & grow clean-energy businesses across the country.
- Small Business Innovation Research (SBIR) initiative provides funding from diverse agencies for many avenues of innovation.
- Small business lending bill (signed 9-27-10) increases loans & cuts taxes for entrepreneurs.
- DOE's energy-innovation hubs link national labs, universities, and industry.



President visiting GE Schenectady, 21 January 2011

Partnerships w the private sector (continued)

- Launched Jan 2011, Startup America bolsters entrepre-neurship by increasing success of high-growth startups that create economic growth and quality jobs
  - Accelerate the transfer of new ideas from labs to the market
  - Create new opportunities for small business financing
  - Improve regulatory environment for starting and growing new businesses
  - 15 private-sector leaders have committed to Startup America's goal of catalyzing & developing entrepreneurial ecosystems a
- The Wireless Innovation and Infrastructure Initiative (Wi3) is an ambitious blueprint to connect 98 percent of the US population with 4G wireless.

More initiatives: IT, space, innovation prizes

- Open Government / Data.gov: making gov't datasets available in support of innovation, entrepreneurship
- Big Data: managing & manipulating large datasets for new insights and applications
- US Ignite: facilitation for high-speed broadband and new apps underpinning economic growth
- Re-balanced space policy: commercial crew/cargo to low Earth obit; heavy-lift rocket & multi-purpose crew capsule; more science, technology, and aeronautics
- Challenge.gov: prize competitions engaging more players in finding creative solutions to challenging problems

More initiatives: energy & environment

- $80 billion for clean & efficient energy in ARRA
- first-ever fuel-economy/CO_2 tailpipe standards for light-duty vehicles
- interagency task force led by OSTP, CEQ, NOAA to coordinate of govt's climate-adaptation activities
- expanded responsibilities for the renamed NSTC Committee on Environment, Natural Resources, and Sustainability
- revival of US Global Change Research Program
- new National Oceans Policy & National Oceans Council

President Obama signing the National Oceans Policy Executive Order (19 July 2010)

Initiatives: STEM-education

- Increased collaboration of White House (OSTP, DPC) with Dept of Education & NSF, HHS, DoD, DOE, NASA
- New national goals: moving American kids from middle to top of internat'l rankings on science & math tests, increasing American proportion of college graduates to 1st in the world by 2020.
- $4.4 billion "Race to the Top" in the ARRA included preference to states whose proposals emphasize innovation in STEM education.
- "Educate to Innovate" program (11-09) for K-12 STEM education w $700+ million in private-sector & philanthropic support; "Change the Equation" added 9-10
- Launched the STEM Master Teacher Corps ($100M in FY2012, aiming for $1B in FY2013) to reward & empower our best STEM teachers

The White House Science Fair, 18 October 2010

Initiatives on principles & procedures

- Stem-cell guidelines
  - expanding stem-cell lines that can be used with federal support while respecting ethical boundaries
- Visa MANTIS procedures
  - streamlining procedures for the MANTIS system that applies to visas for scientist & technologists
- Streamlining reporting on federal grants
  - Simplified progress reports, uniform across agencies
- Scientific integrity principles, guidelines, policies
  - 3-09-09 Presidential principles memorandum, 12-17-10 OSTP Director's guidelines
  - agency draft policies submitted by 7-17-11

Principles & procedures (continued)

- Open government
  - Presidential Memorandum on 1st full day in office challenging agencies to become more transparent & participatory
  - Departments and agencies all now have open-government plans and websites, with data sets not previously available to the public

AAAS Fellows: Please check out the site at your agency [http://agency.gov/open]; identify high-value data sets that the agency possesses but are not yet accessible in machine-readable form and try to get them online; help your agency work on transparency and citizen participation.

Initiatives: International S&T cooperation

- Reviving & strengthening the high-level Joint Commission Meetings on S&T cooperation with China, India, Brazil, Japan, S Korea, Russia
- Nurturing the strong S&T cooperation that has long existed with the EU, Canada, Australia, NZ…
- Convening the Multilateral Economic Forum, US-China S&ED, US-Russia Presidential Commission strong ST&I focus
- Streamlining the visa procedures that apply to visiting scientists & technologists
- S&T as a centerpiece of Cairo speech (Science Envoys, centers of excellence) & USAID strategy

Science Envoys: the 1st two cohorts

2009-10

Bruce Alberts
Indonesia

Elias Zerhouni
Morocco, Libya, Algeria, Tunisia, Qatar, Kuwait, Saudi Arabia

Ahmed Zewail
Egypt, Turkey, Lebanon, Jordan

2011-12

Rita Colwell
Bangladesh, Malaysia, Vietnam

Gebisa Ejeta
South Africa, Tanzania, Kenya

Alice Gast
Azerbaijan, Kazakhstan, Uzbekistan

http://www.america.gov/science_envoys.html

What he's done: Federal S&T budgets

- Huge boost for S&T in the Recovery Act.
- S&T investment goals: double the budgets of 3 basic science agencies; make the Research & Experimentation Tax Credit permanent; lift public + private investment in R&D to ≥ 3% of GDP.
- The President's 2010, 2011, and 2012 Budgets would have put us on track to meet the goals.
- There were setbacks in 2011 & 2012 appropriations because of Budget Control Act spending caps.
- Despite setbacks, S&T fared better in 2011 and 2012 appropriations than most other sectors.

2012 appropriations for some key agencies

- NIH — $31.1 billion (+1.0%)
- DOE's Office of Science — $4.9 billion (+0.9%)
- NOAA — $4.9 billion (+6.7%)
- National Science Foundation — $7.0 billion (+3.3%)
- NIST laboratories — $622 million (+7.8%)
- DoD's basic research portfolio — $2.1 billion (+12.5%)
- NASA down 3.5% overall, but science up

The President's FY2013 R&D Budget

- $140.8B for Federal R&D (up $2.0B from FY2012 enacted)
- Nondefense R&D = $64.9B (up 5.0%)
- Basic & applied research = $64.0B (up 3.3%)
- NIH = $30.7B (flat)
- DOE R&D = $11.9B (up 8.0%)
- NASA R&D = $9.6B (up 2.2%)
- NSF = $7.4B (up 4.8%)
- USGCRP = $2.6B (up 5.6%)
- NIST labs = $708M (up 13.8%)
- DHS R&D = $729M (up 26.3%)

General challenges in Federal S&T policy

Policy for S&T

- Allocating budget resources among competing needs
- Reconciling (or tolerating) diverse agency perspectives on transparency/openness, roles of scientists in public communication, etc
- Fomenting & coordinating inter-agency initiatives

S&T for policy

- Recognizing that the S&T “facts” aren’t everything
- Cultivating cooperative relations with other advisors
- Using the time & attention of the principal wisely

The specific challenges ahead

- Sustaining support for S&T under budget cuts

  Particularly difficult will be sustaining support for…

  – NASA (JWST, advanced technology)

  – NOAA (polar-orbiting satellites, climate service),

  – DOE (CO_2 capture, fusion)

  – NSF (social science)

  – USDA (peer-reviewed agricultural science)

  – EPA & FDA (regulatory science)

  – USGCRP (climate science, sustainability science)

  – all international cooperation

The challenges ahead (continued)

- Getting key messages across

  why science & engineering matter (to economy, environment, security), how science works

- Advancing a coherent energy-climate policy

  with large public investments in both mitigation and adaptation

- Implementing public-interest IT initiatives

  health IT, gov't efficiency & openness, public safety

- Addressing systemic weaknesses in STEM-ed

  weak teacher competence in K-12, inertia w respect to adopting more effective methods at college level

The specific challenges ahead (continued)

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http://www.ostp.gov